Landfill Gas & Air Permitting
at the
Fresh Kills Landfill
LFGas Collection and Odor Control System

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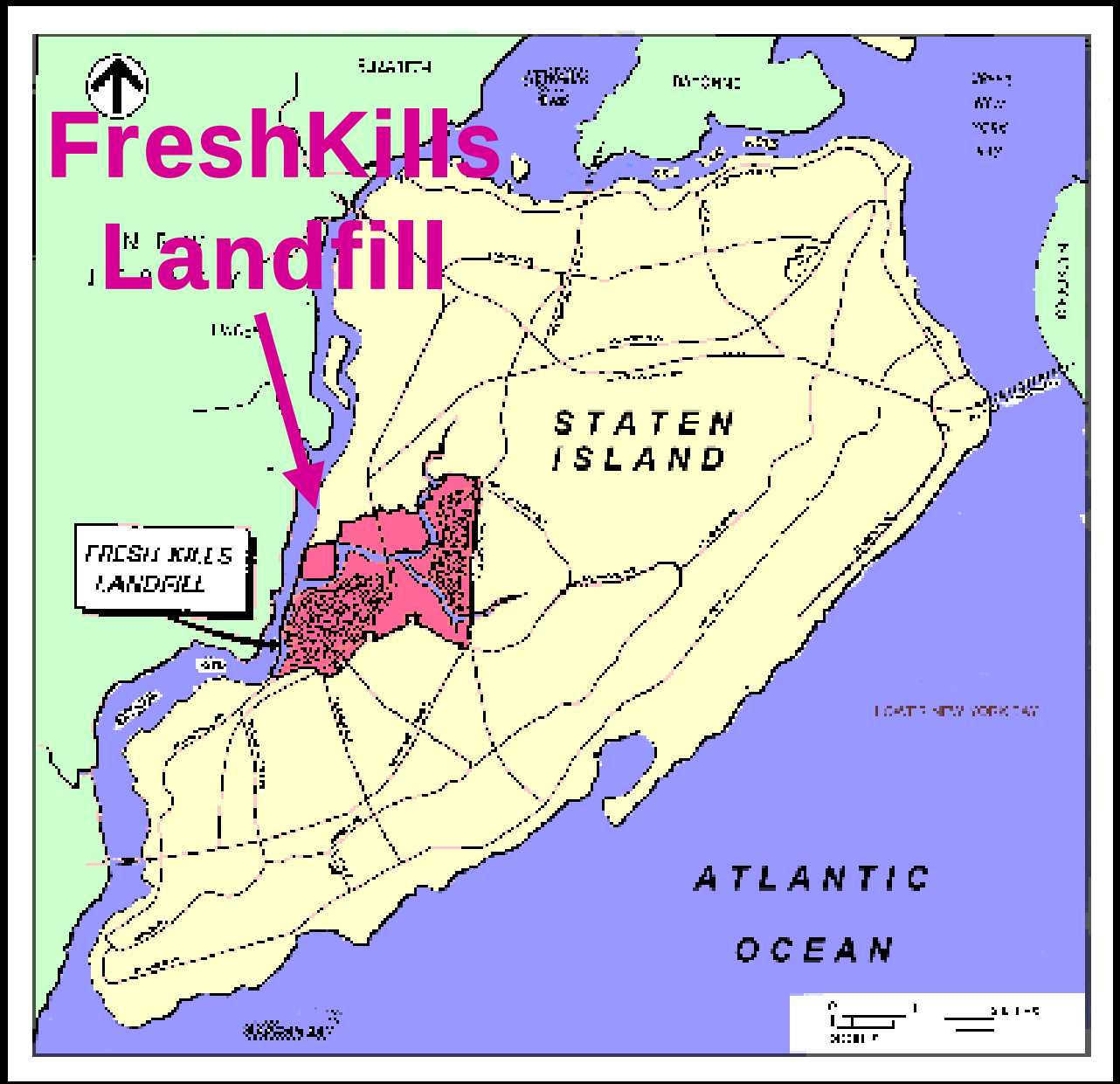
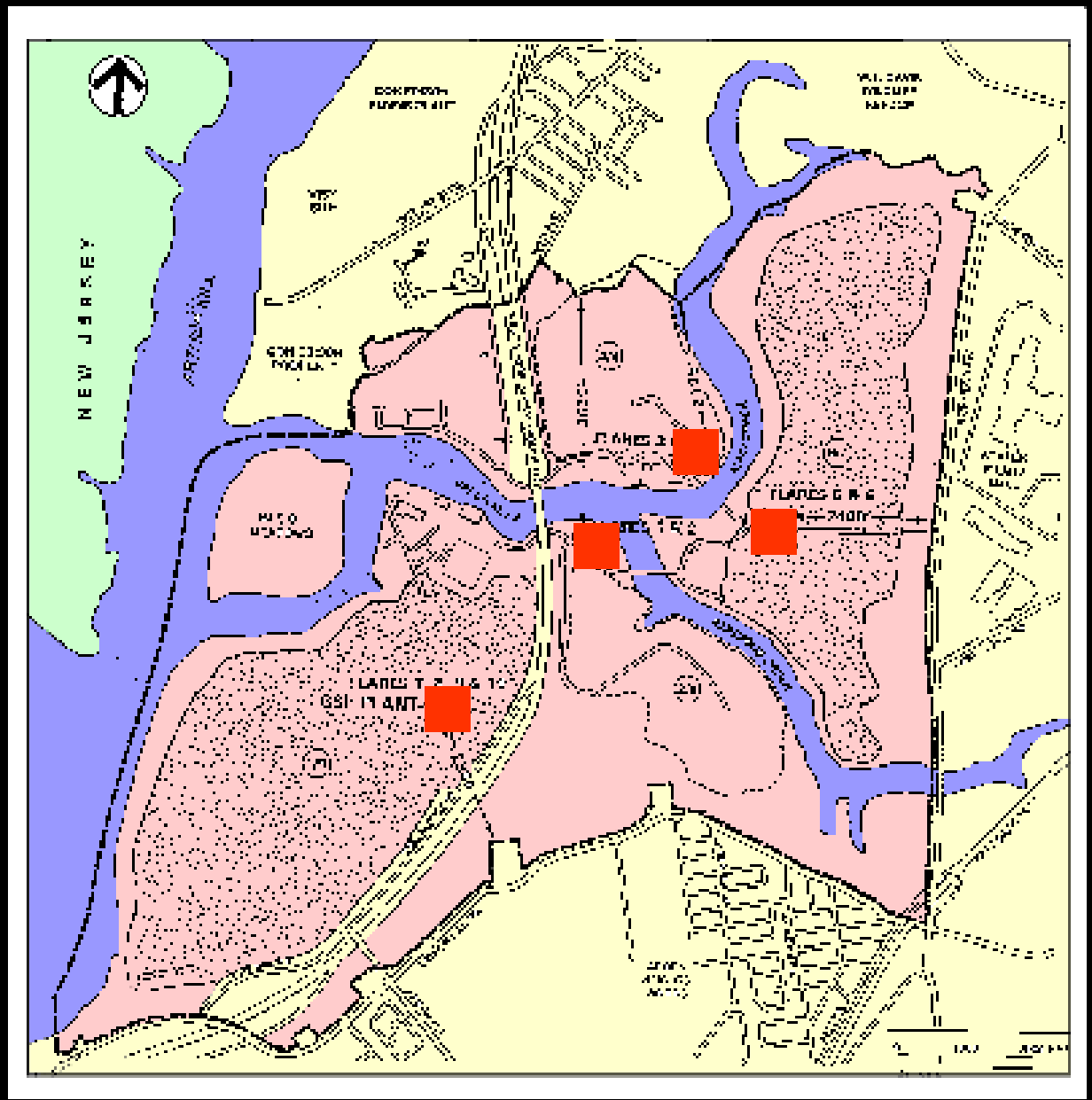
Fresh Kills Landfill

- New York City Department Of Sanitation(DOS)
- Richmond County, Staten Island, NYC
- Waste acceptance began in 1948
- The last major active MSW landfill in NYC
- Considered one of largest MSW landfills
- 2,200 acres

Staten Island





Flare Stations

Fresh Kills LF

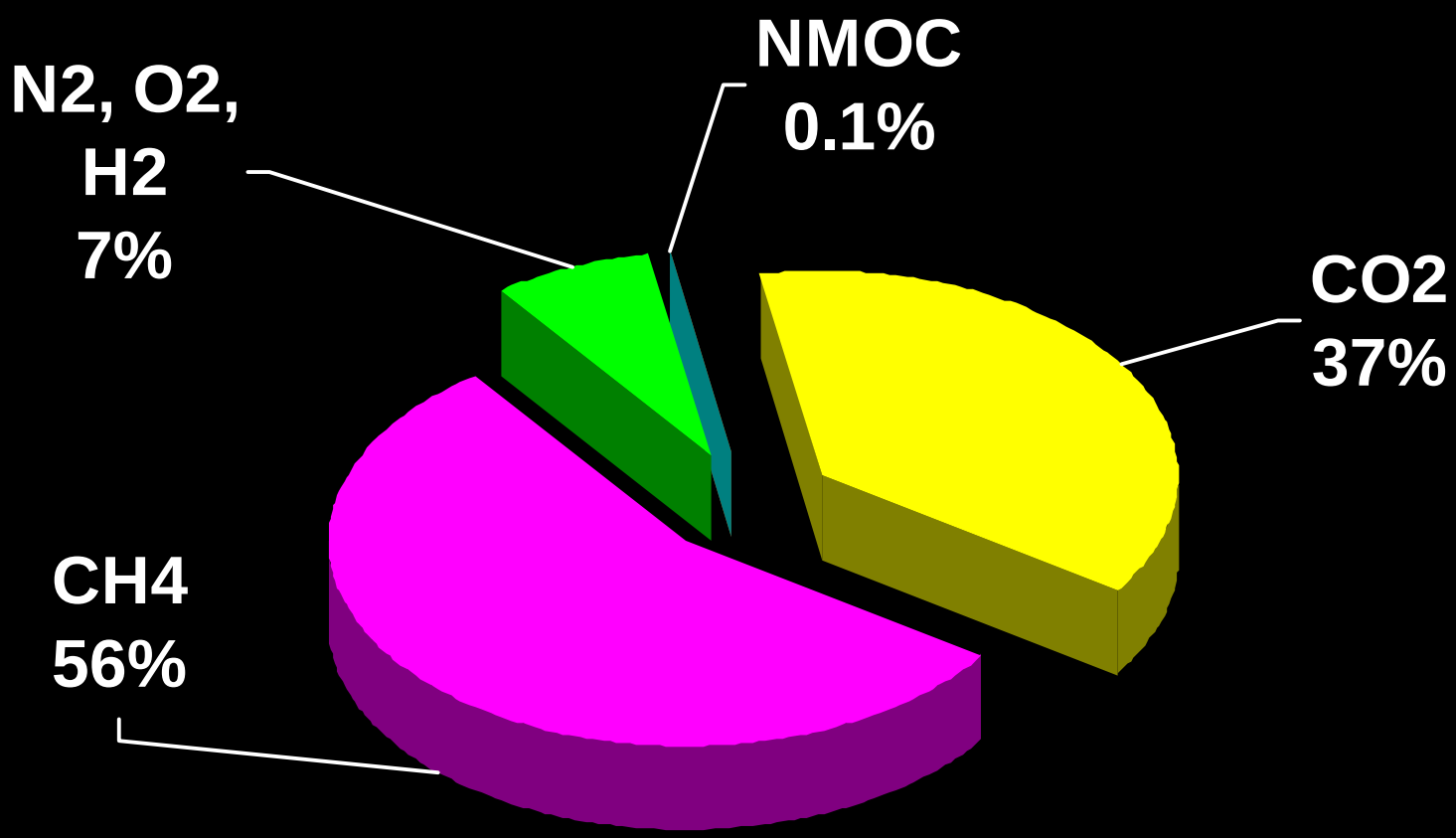
Regulatory Background

- 1990 Order on Consent (Reference N-109) between NYSDEC and NYCDOS:
  - requires compliance with 6 NYCRR 360
  - specifies conditions for closure of Section 2/8 and 3/4 and interim operation of FKLF
  - Identifies collection of LFGas as an integral part of Closure Plan
- May 1996 agreement between NYC Mayor Guliani and NY State Governor Pataki
- Passage of New York State Legislature mandating closure of FKLF by December 31, 2001

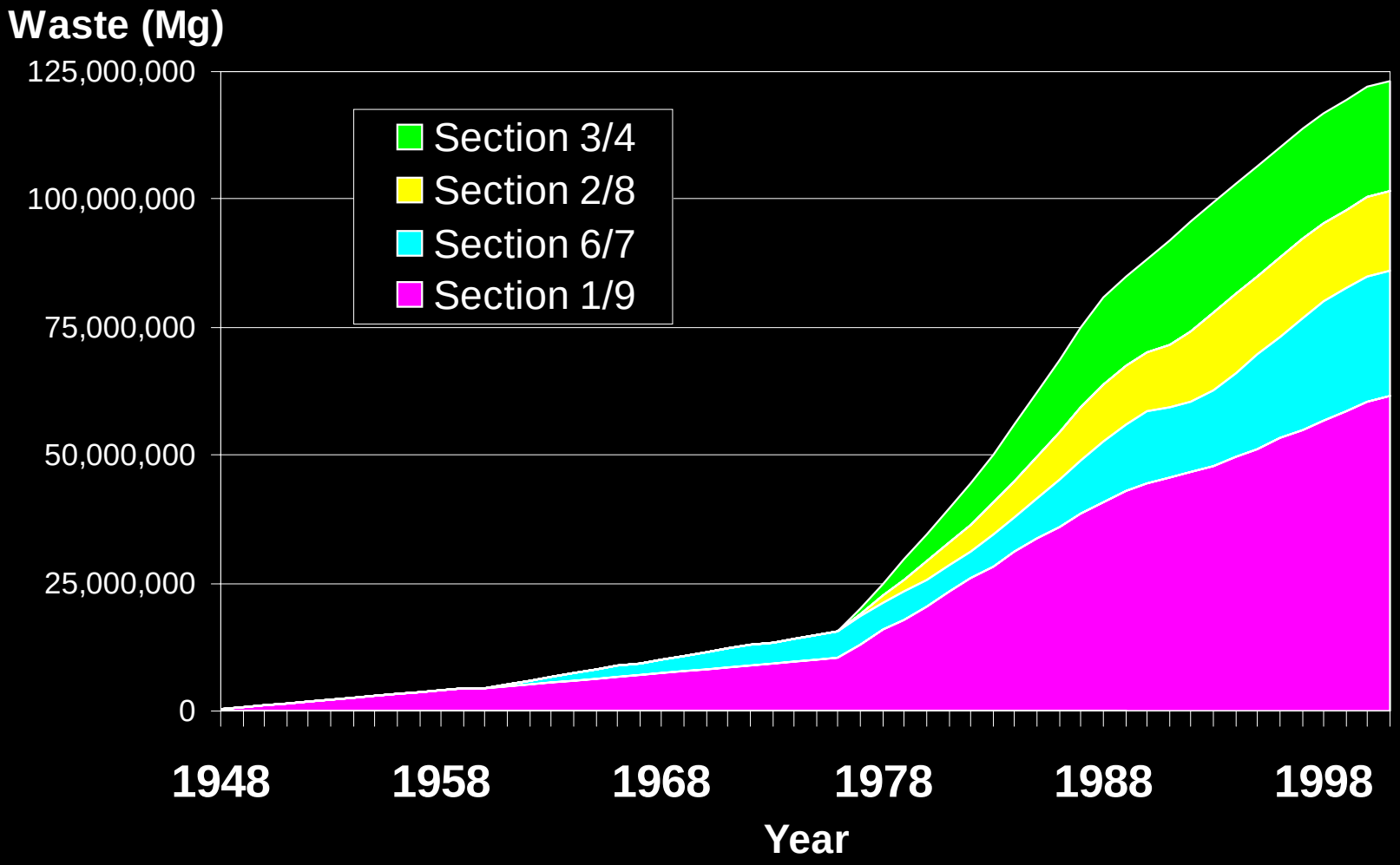
Gas Collection & Odor Control Systems

- Capping of LF Surface
- Install Gas Extraction Wells & Headers
- Blower System
- Combustion Flares
- Future Beneficial Use Of Gas
  - Clean Up Gas to Pipeline Quality
  - Fuel for Cogen or other energy use

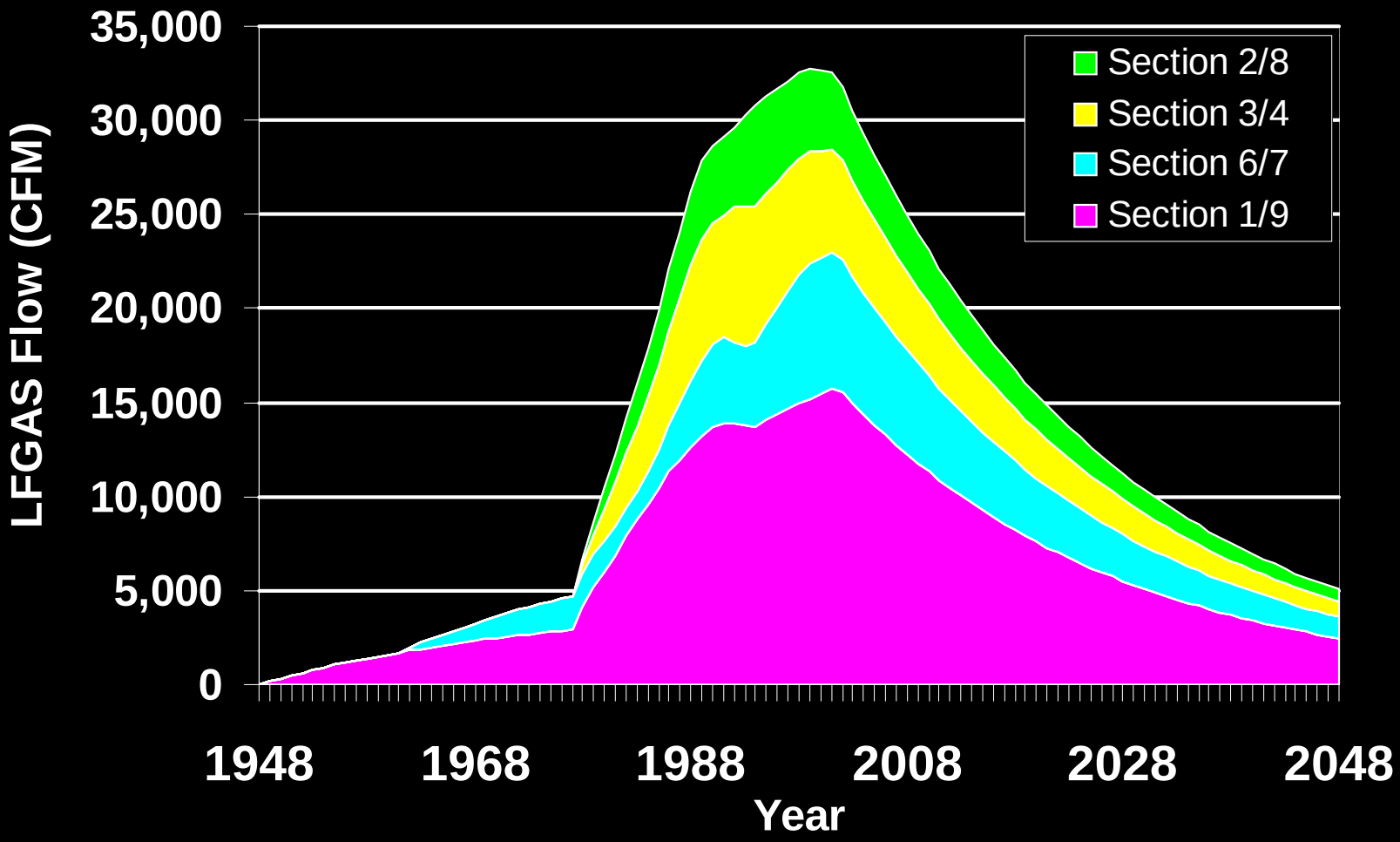
LFGas Composition



Cumulative Waste Acceptance



Landfill Gas Generation



System Objectives

- Control
  - Odors
  - Toxics Air Contaminants (HAPs)
  - Greenhouse Gases
- Future Beneficial Use

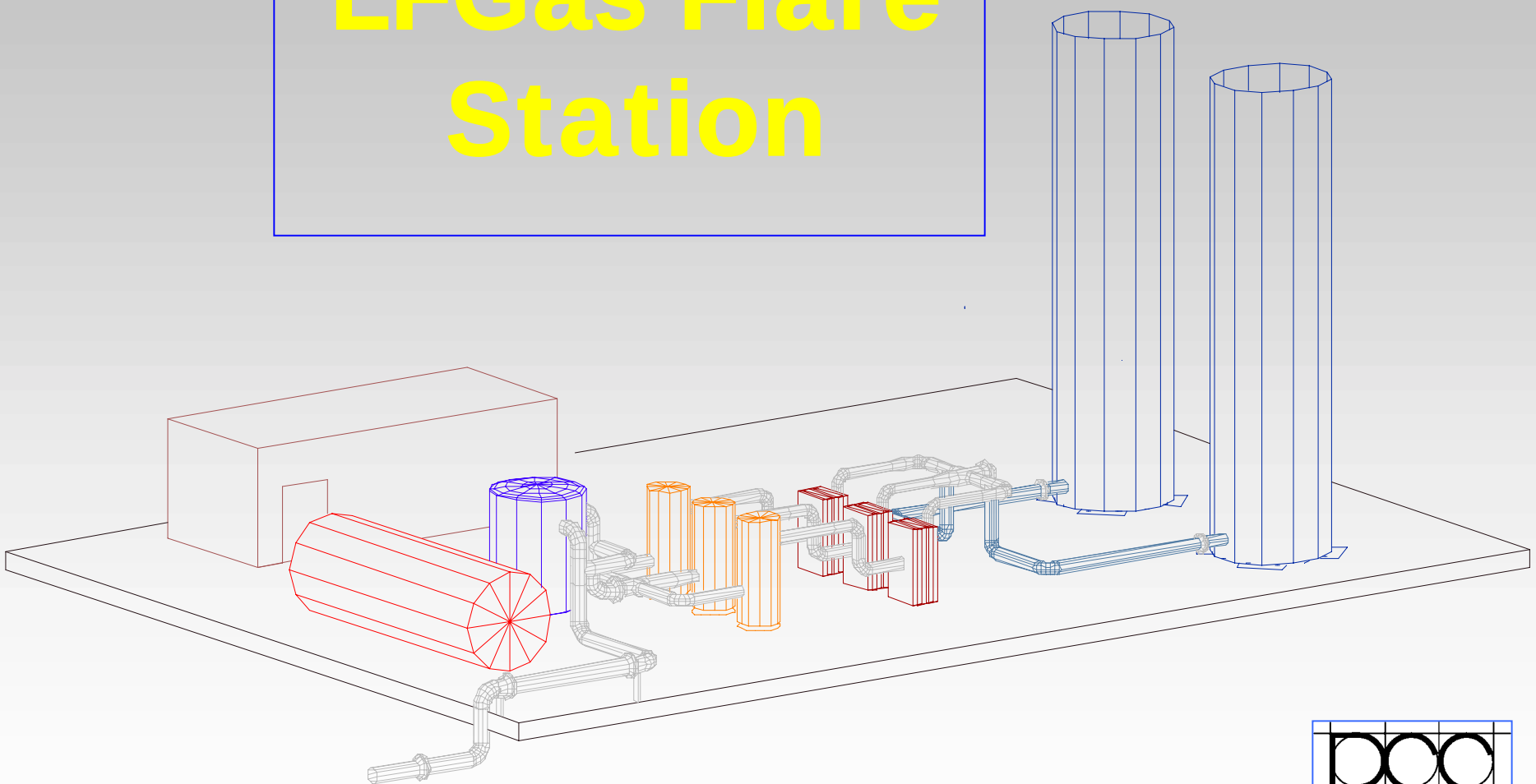
LFGas Collection System

- Surface Cap
- Gas Extraction Wells & Trenches
- Well head Valves
- Manifold Header System
- Condensate Tanks
- Blower System

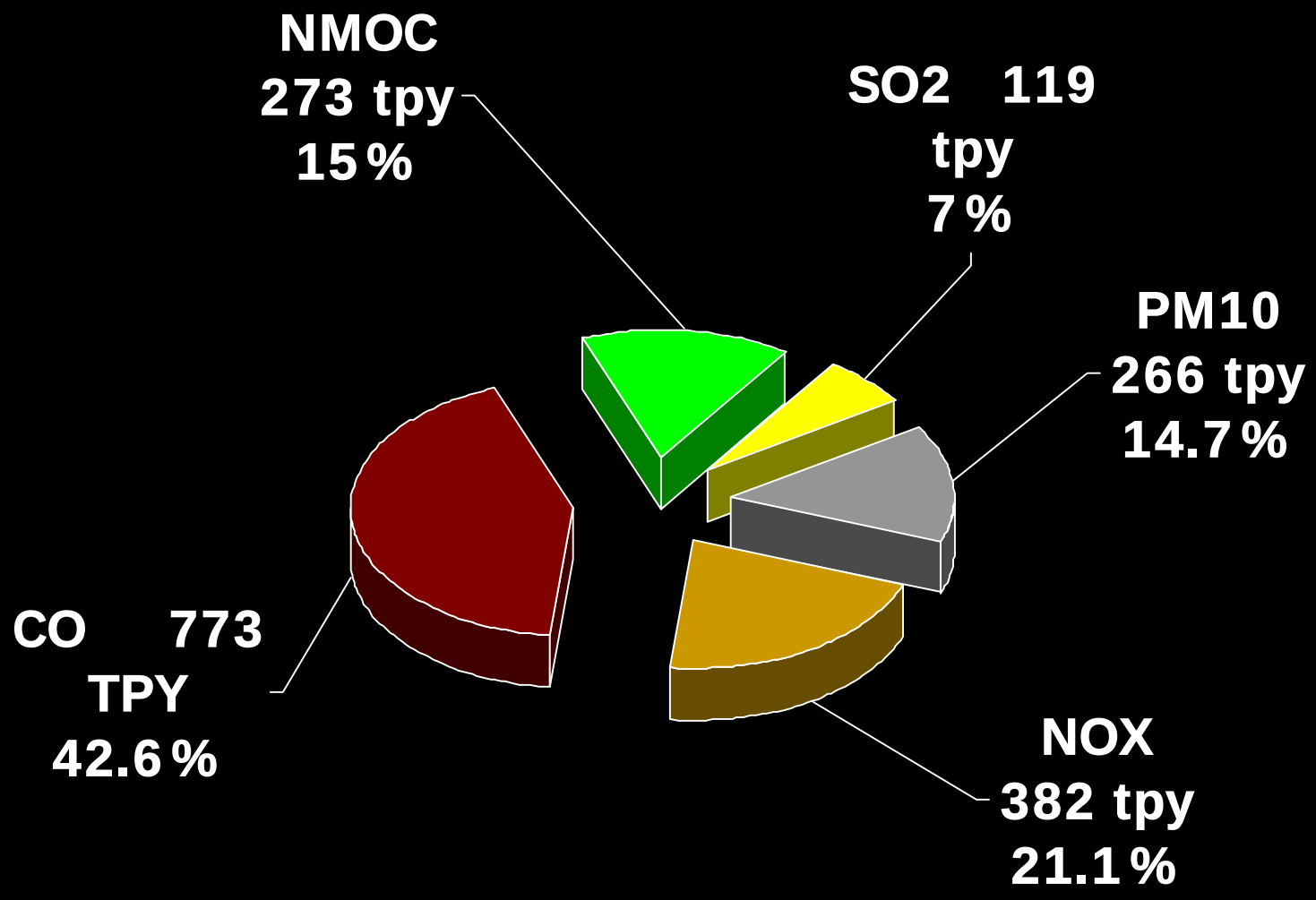
Flare Station Components

- Condensate Knockout Drum
- Condensate Tank
- Demisters (3)
- LFGas Blowers (3)
- Flare (2), 5,000 scfm
- Flare Control Building

LFGas Flare Station



Controlled Emissions



Emission Summary

	Uncontrolled	*With Controls*		
	LFGas Emission	*Flare Emissions*	*Uncollected Gas*	*Total Potential Emissions*
CH4	**201,170**	**20.1**	**20,117**	**20,137**
NMOC	**2,273**	**45.5**	**227**	**273**
CO2	**368,421**	**921640**	**36,842**	**958,482**
CO	**-**	**773.2**	**-**	**773**
NOx	**-**	**3811.8**	**-**	**382**
SO2	**-**	**119.4**	**-**	**119**
PM10	**-**	**265.8**	**-**	**266**
Total w/CO2	***571,865***	***923,245***	***57,186***	***980,432***
Totals	***203,443***	***1606***	***20,344***	***21,950***

NYSDEC Air Permit Requirements

- NYSDEC Permit to Construct
  - 6 NYCRR Part 201 *Permits and Certificates*
  - Combustion sources with heat input >1 MMBtu/hr
- Prevention of Significant Deterioration (PSD) Req'ts
- Nonattainment Area (NAA) Requirements
  - NAA for Ozone and Carbon Monoxide
- New Source Performance Standards (NSPS)
  - Subparts WWW and Cc Emission Guidelines

Permitting Participants

- New York City Department of Sanitation (NYCDOS)
  - Paulus, Sokolowski and Sartor, Inc. (PS&S)
  - Interstate Industrial Corp. (IIC)
- New York State Department of Environmental Conservation (NYSDEC)
- United States Environmental Protection Agency (EPA)
- Staten Island Borough President's Office
- New York City Department of Environmental Protection (NYCDEP)
- Barbara Warren & Associates

Prevention of Significant Deterioration (PSD) Requirements

- 40 CFR 52.21 and 6 NYCRR Part 231
- Existing Landfill is a PSD regulated source
- Applicability:
  - Adding LFG Flares is a major modification to existing facility
  - Secondary emissions of NO_x, PM, and SO_2 above PSD thresholds
- BACT/LAER Analysis
  - Flares are Best Demonstrated Technology (BDT) for LFG Control (NSPS)
  - NO_2: Flares constitute LAER and BACT for LFG
  - SO_2: BACT H_2S Pretreatment technologies evaluated - not feasible/cost effective

Nonattainment Area Requirements

- New York City is Nonattainment
  - Ozone (Nitrogen Oxides NOx)
  - Carbon Monoxide (CO)
- NOx and CO NAA Review required
  - LAER required for NOx and CO
  - Emissions Offsets for NOx and CO
  - CO Net Air Quality Benefit Analysis

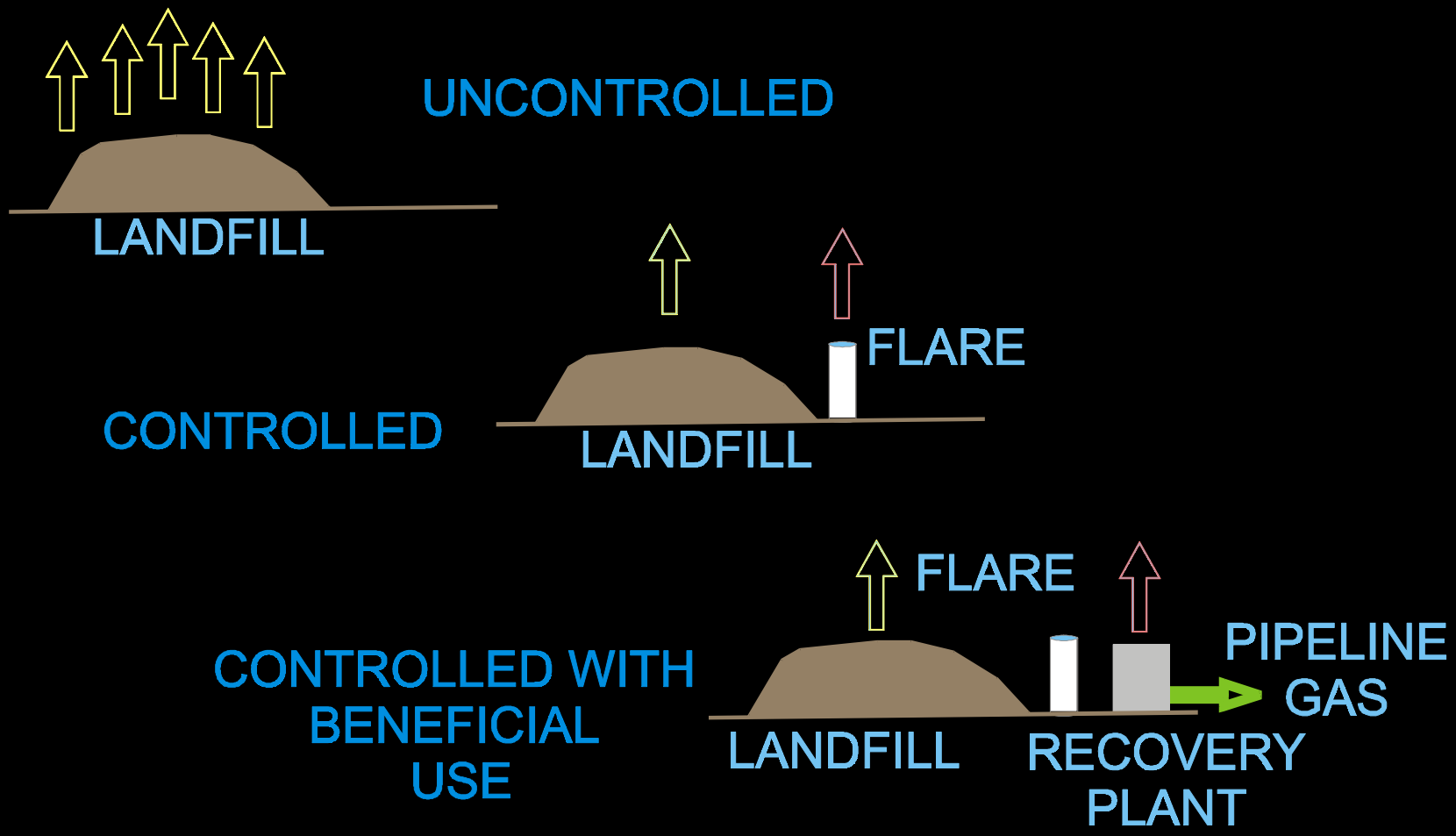
Atmospheric Dispersion Modeling

- NYSDEC and EPA Guidelines
- ISCST3 Atmospheric Dispersion Model
- On Site Meteorological Data
- Net Air Quality Benefit Analysis for CO
- Results of Air Quality Impact Analysis
  - < Ambient Air Quality Standards
  - < PSD Significance Concentrations
  - CO Net Air Quality Benefit

LFGas Flare Emissions Testing

- Enhanced Performance Test
  - LFGas Flare Parametric Monitoring
  - LFGas Flare Operation Matrix
  - Correlation of Emissions Testing Results with LFGas Flare Parametric Data
- Compliance Emissions Test
  - Determine Compliance of each Flare with NYSDEC Air Permit Emission Limits
  - Test Parameters

LFGas Project Development



LFGas Project Considerations

- Regulatory Requirements
  - Review Potential Emissions
- “Pollution Control Project”
  - Relief on Emission Offset Requirements
  - BACT vs LAER
- Environmental Benefits
  - Odor Control
  - Reduced Emissions of HAPs and GHG
- Energy Benefits
  - Utilize Fuel Value
  - Displaces Alternate Fuels